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Homework: cover textbook

8/31 Chem A Block Mr. Guerin

Chapter 1, 2, test starts here.

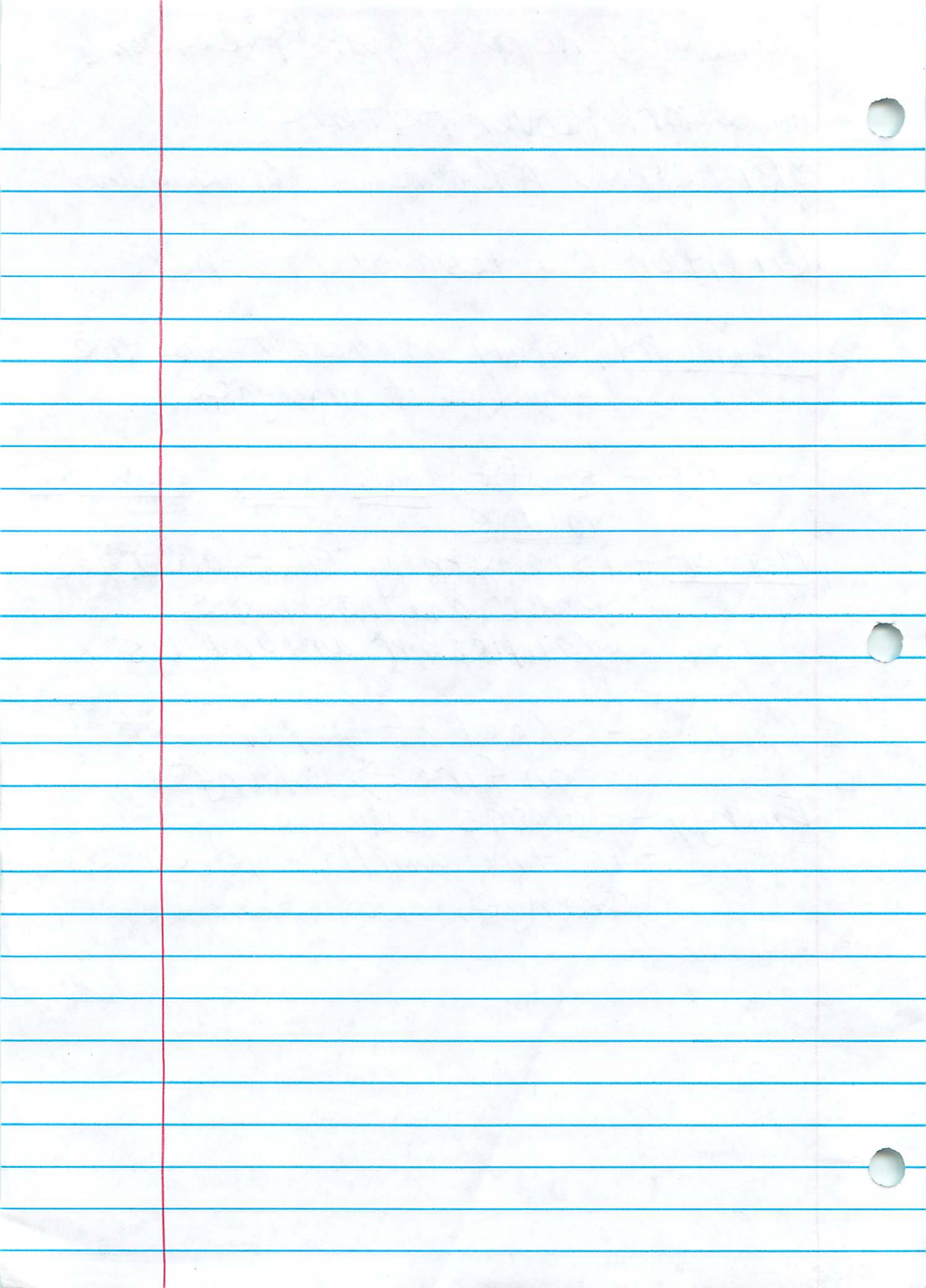
Chemistry: study of matter and the changes it undergoes.

Matter - (stuff) has mass, occupies volume

Matter - is anything that occupies space and has mass
example: air around us.

Change - sheet of paper, set on fire \Rightarrow changed

Energy - causes change
- is the ability to cause change.



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A BLOCK

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Aqueous - dissolved in water
ex - cleaning solutions

Matter is always conserved.

★ Law of the Conservation of Matter

- matter cannot be created nor destroyed by ordinary means

Extraordinary means - nuclear reactors (splitting atoms) huge amounts of energy
During experiments, matter is conserved, look and observe changes.

Physical Properties/Changes:

- no change in chemical makeup.

Shape	solubility
Size	color
mass	odor
volume	freezing pt
texture	melting pt
↑	boiling pt

Extensive

can change

↑

Intensive

are specific to a particular sub.

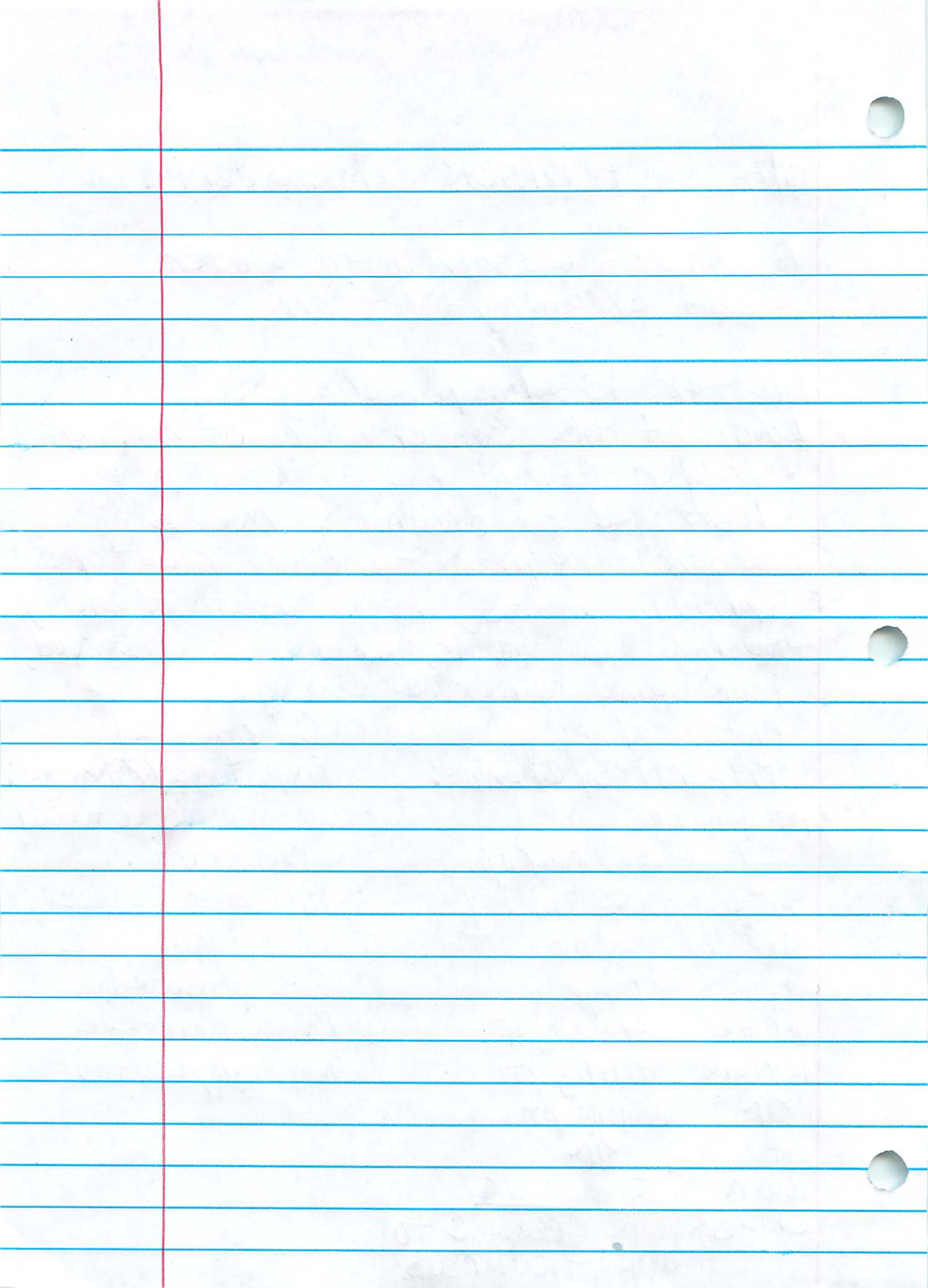
Chemical

Properties/Changes:

- changes chemical makeup.

4 lines of evidence:

- ① color change
- ② Gas produced
- ③ Energy Released (heat, light, sound)



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Mixtures:

Combined physically,
Keep their own individual properties.

Can be easily separated.
ex- bag of Halloween candy.

- Solutions are a type of Mixture
- Suspension: Salad dressing, needs to be shaken
- Colloid- milk, mayonnaise
Fog- particles are big enough to shine a light on.

Pure Substances:

a sample of matter that has the same chemical make up and properties regardless of source or size of the sample.
Same chemical make up.

Types:

- Element- a substance containing only one type of atom. are the building blocks of matter, can not be broken down any further, ex-Zn
- Compound- two or more elements bonded together. ex- HNO_3 , AgNO_3

Mixtures: Distribution of particles
Homogeneous everything is uniform, evenly spaced, uniform distribution of particles.
Heterogeneous not uniform in distribution of particles

Periodic Table of the Elements

Dmitri Mendeleev;
arranged elements by increasing mass and grouped elements by similar properties
Elements with similar properties

Lab on Copper Cycle

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ABLOCK

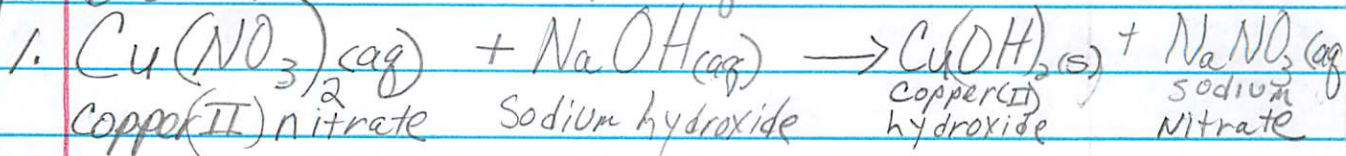
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Steps

Blue solution

Clear lig.

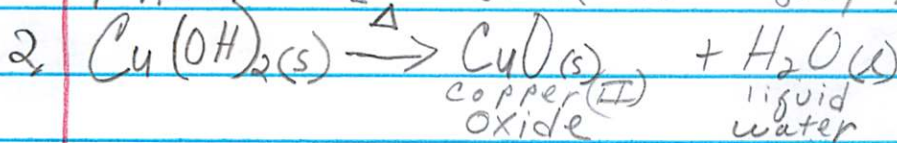
Blue Solid



+ heat

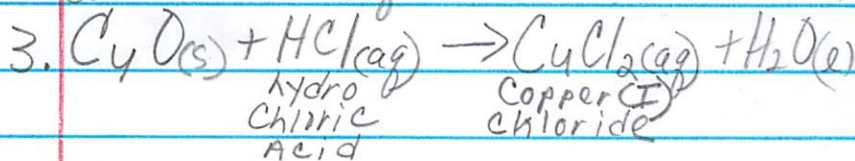
Black solid

grey liquid



Black Solid clear

Blue Sol., no solid left over

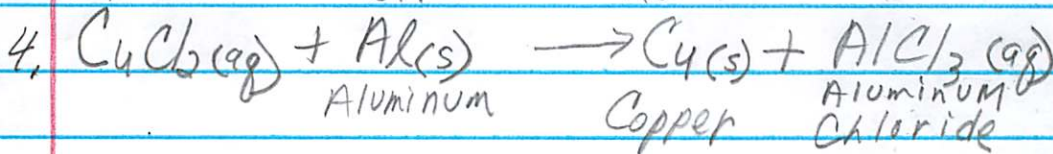


Blue Sol.

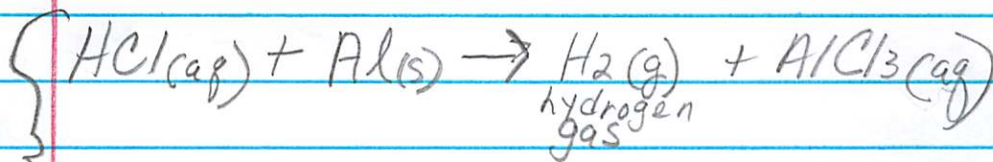
wire

metal

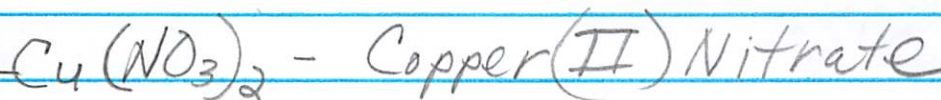
colorless



5

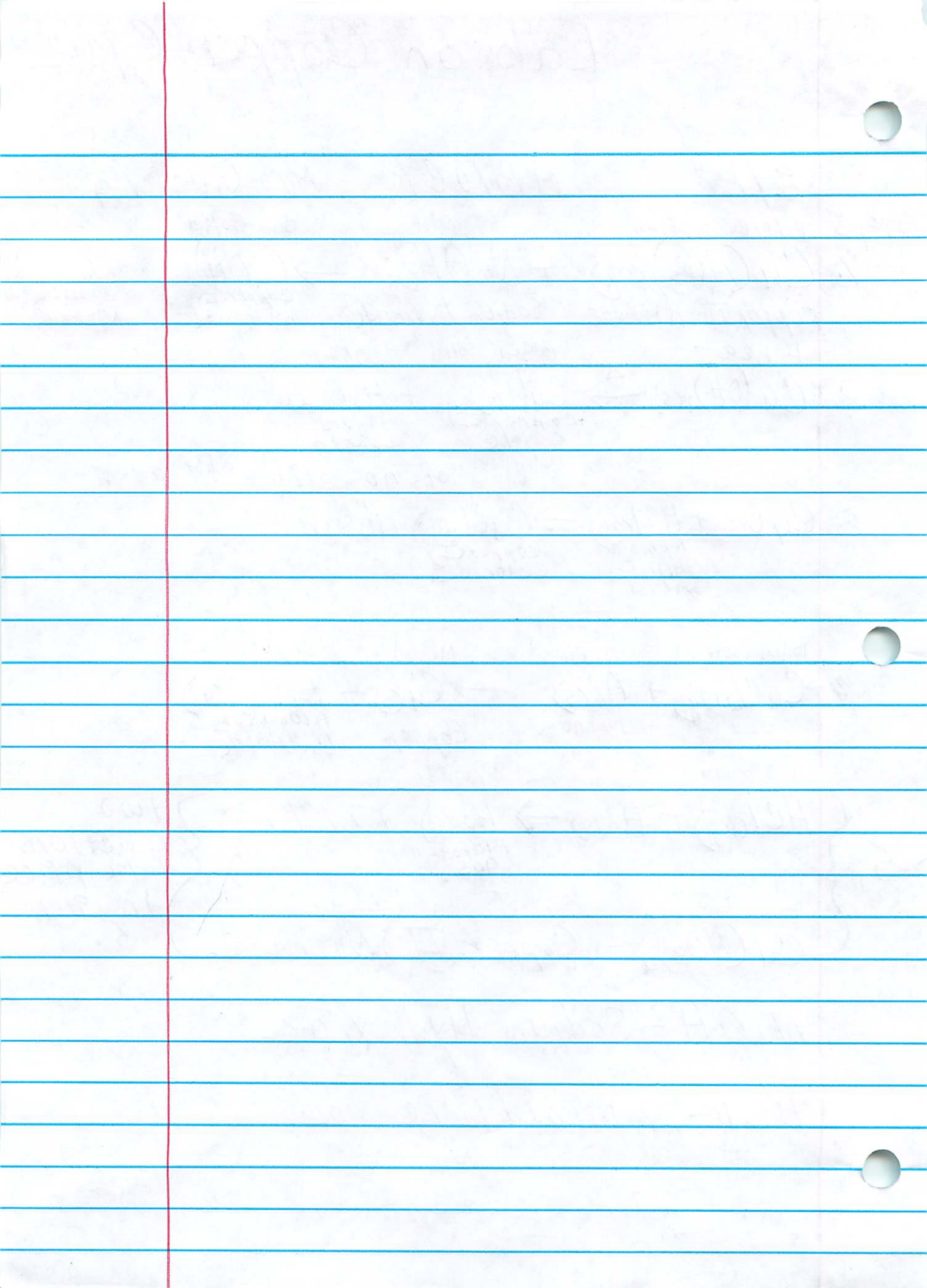


two
reactions
take place
in step
5.



NaOH - Sodium Hydroxide

HCl - hydrochloric acid

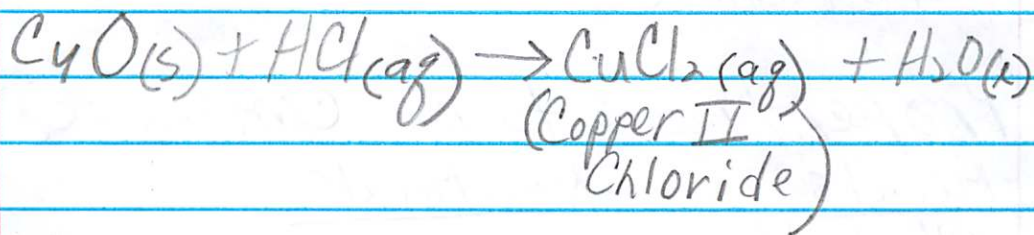
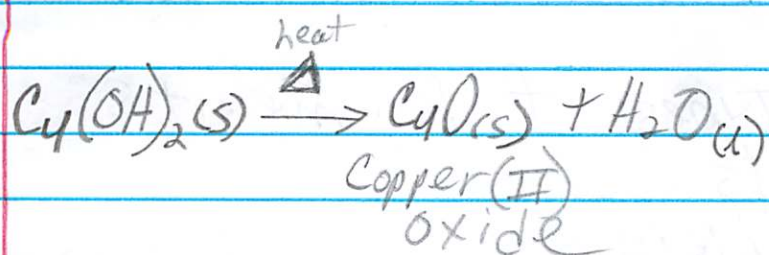
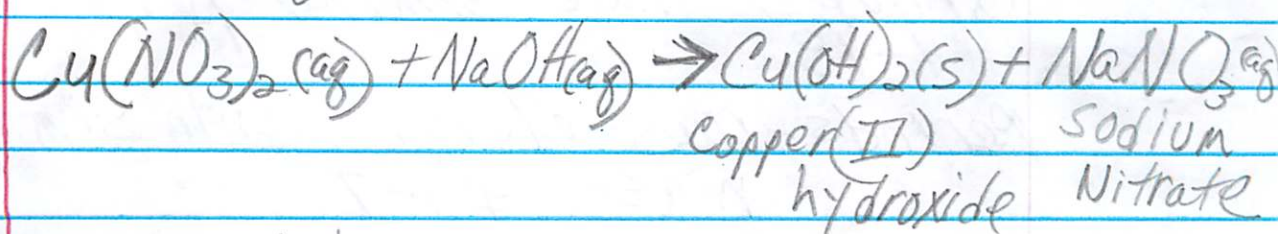


HW: due on Wed. Chap. 1 homework #3 4 + Graph

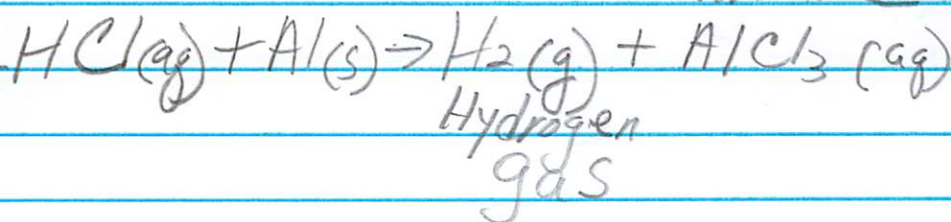
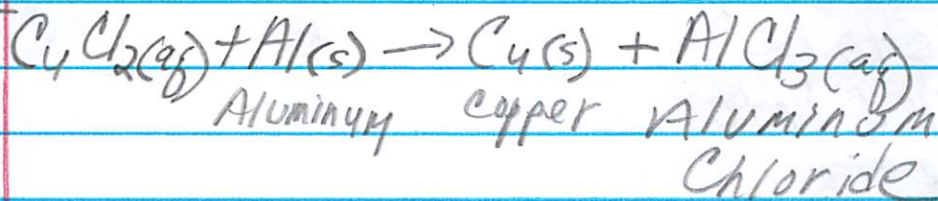
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Copper Lab Reactions:

(aq) - aqueous, dissolved in H_2O



Both reactions happen at same time



* Modern Periodic Table: error

Groups - Columns, elements in Groups have similar properties
#1-18

Periods - rows - elements with similar mass. #1-7

Three Types of Elements

- Metals
- Non-Metals
- Metalloids

Properties: to be continued

Metals

Malleability,
able to be
rolled into
sheets.

Non-Metals

TEST on Chap. 1, Fri 9/23

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HW: Chap 1 p. 8 #2 due Wed.

$$\% \text{ Error} = \frac{|\text{observed value} - \text{actual value}|}{\text{actual value}} \times 100$$

tells how far off

Periodic Table

Periods - rows going across

Groups - columns up and down

Elements in the same group have similar properties

Stair case on the Periodic Table:

Metals - left of staircase

Non-Metals - right of staircase

Metalloids on the staircase.

Types of Elements

Metals

Malleability

luster

conduct

electricity

and heat

ductile

High tensile

Strength

Non Metals

brittle - crumble

dull

insulators

Metalloids

semi -

conductors

have properties

of both

metals and

non-metals

ex - Si, silicon

Four Major Groups of Periodic Table

Group I - Alkali Metals:

soft, silvery, highly reactive
not found freely in nature
have a $+1$ charge.

TEST on Chap. 1, Fri 9/23

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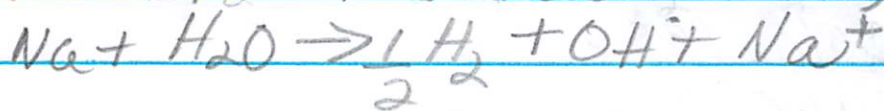
* Periodic Table

Groups - Elements in the same group share similar properties.

* Group I - Alkali metals, get more reactive going down the group, have +1 charge.

Alkali Metals get more reactive in H_2O .

- soft metals - cut w/ knife \Rightarrow smear
- corrodes in air
- Na (sodium) kept under oil
- reactive in H_2O (water)



\uparrow Hydrogen gas is produced.

Alkali means Basic, high pH.
neutralizes acid, an antacid
 OH^- ion = Base

* Group II - Alkaline Earth Metals

- are harder, denser, less reactive than Group I
- very reactive metals
- Not found freely in nature
- Have +2 charge (over \rightarrow)

* Groups 3-12 Transition Metals

- all have luster
- all conduct heat and electricity
- Cu used to wire houses
- varying properties of metals

* Group 17 Halogens

- highly reactive non-metals
 - react readily w/ Group I metals
 - have a -1 charge
- ex - NaCl

* Group 18 Noble Gases

- colorless
- odorless
- unreactive
- separated by Fractional distillation.